SECTION 4

ELECTRICAL ADJUSTMENTS

CONTENTS

1. POWER SECTION

1-1. DC Voltage Adjustment (DC5.6V) 4-1

2. SERVO & AV SYSCON SECTION

2-1. Supply Reel Torque Offset Adjustment 4-1
2-2. Take Up Reel Torque Offset Adjustment 4-1
2-3. Supply Reel Motor Torque Offset Adjustment 4-2
2-4. Take Up Reel Motor Torque Offset Adjustment 4-2
2-5. Photo Sensor Voltage Adjustment 4-2

3. RF SECTION

3-1. Clock Refresh PLL Adjustment 4-3
3-2. AUTO EQ Adjustment Procedures 4-3

4. DIGITAL CORE SECTION

4-1. Dip Switch Initial Setting 4-5
4-2. Audio VCO Center Frequency 48KHz Adjustment 4-5
4-3. Audio VCO Center Frequency 44.1KHz Adjustment 4-5
4-4. Audio VCO Center Frequency 32KHz Adjustment 4-5

5. TBC SECTION

5-1. PLL Lock DC Adjustment 4-6
5-2. SG S/H Adjustment 4-6
5-3. 14.3MHz VCO Adjustment 4-6
5-4. REF SCH Adjustment 4-6
5-5. System Sub Carrier Phase Adjustment 4-7
5-6. System H Phase Adjustment 4-7
5-7. Burst Phase Adjustment 4-8
5-8. Video Position Adjustment 4-8
5-9. Y signal Timing Adjustment (1) 4-9
5-10. Y signal Timing Adjustment (2) 4-9

6. VIDEO I/O SECTION

6-1. Initial Setting 4-10
6-2. Set UP Adjustment 4-10
6-3. Carrier Balance Adjustment 4-10
6-4. SYNC Level Adjustment 4-10
6-5. Y/C Y Level Adjustment 4-11
6-6. Composite Y Level Adjustment 4-11
6-7. Burst Level Adjustment 4-11
6-8. Burst Adjustment 4-12
6-9. Vector Adjustment 4-12
6-10. Vector Adjustment (R-Y TIMING) 4-13
6-11. Y Freq. Response Adjustment 4-13
6-12. Composite YC Timing Adjustment 4-13
6-13. RSTW Adjustment 4-14
6-14. OSD Character Position Adjustment 4-14
6-15. PR/PB Signal Balance Adjustment 4-14
6-16. AD Y Clamp Level Adjustment 4-15
6-17. AD Y Input Level Adjustment (Y/C) 4-15
6-18. Record Chroma Adjustment (Y/C) 4-15
6-19. AD Y Input Level Adjustment (CPS) 4-16
6-20. Record Chroma Adjustment (CPS) 4-16
6-21. EE Y Level Adjustment 4-17
6-22. EE Chroma Adjustment 4-17
6-23. VV Clamp Potential Adjustment 4-18
6-24. EE Clamp Potential Adjustment 4-18
6-25. SCH Detection Adjustment 4-18
6-26. AD Y PR Timing Adjustment 4-19
6-27. AD Y PB Timing Adjustment 4-19

7. AUDIO SECTION

7-1. Initial Setting of Audio Adjustment 4-19
7-2. Output Level Adjustment 4-19
7-3. Input Level Adjustment 4-19
7-4. EE Level Adjustment 4-20
7-5. Level Meter Adjustment 4-20
7-6. Initial Setting of CUE AUDIO Adjustment 4-20
7-7. CUE AUDIO PB LEVEL Adj. 4-20
7-8. CUE AUDIO BIAS CURRENT Adj. 4-20
7-9. CUE REC/PB Level Adjustment 4-20

1. POWER SECTION

1-1. DC Voltage Adjustment (DC5.6V)

Board	POWER 2
Spec.	5.75V ± 0.02V
Test	TP1001
Adjust	VR1001
Mode	------
M. Eq	Digital Volt Meter

1. Connect the digital voltmeter between the TP1001 and GND, and adjust the VR1001 so that the DV voltage is within the specification.

2. SERVO & AV SYSCON SECTION

2-1. Supply Reel Torque Offset Adjustment

Board	SERVO
Spec.	0 ± 5mV
Test	TP2403,TP2404 (GND)
Adjust	A02:S OFFSET (SERVO ADJUST)
Input signal	------
Mode	EJECT
Tape	------
M. Eq	Digital Volt Meter.

1. Open the “A00: SERVO ADJUST” menu on Service menu and select the item “A02: S OFFSET”.
2. Press the “DATA+” or “DATA-” button so that the DC voltage is within the specifification.

2-2. Take Up Reel Torque Offset Adjustment

Board	SERVO
Spec.	0 ± 5mV
Test	TP2453,TP2404 (GND)
Adjust	A01:T OFFSET (SERVO ADJUST)
Input signal	------
Mode	EJECT
Tape	------
M. Eq	Digital Volt Meter

1. Open the “A00: SERVO ADJUST” menu on Service menu and select the item “A01: T OFFSET”.
2. Press the “DATA+” or “DATA-” button so that the DC voltage is within the specifification.

2-3. Supply Reel Motor Torque Offset Adjustment

Board	SERVO
Spec.	1.5mN•m ± 0.2mN•m (15g•cm ± 2g•cm) (five times on average)
Test	------
Adjust	A04:S TORQUE (SERVO ADJUST)
Input signal	------
Mode	STOP
Tape	------
M. Eq	Dial Torque Gauge

1. Open the “A00: SERVO ADJUST” menu on Service menu and select the item “A04: S TORQUE”.
2. Set the Dial Torque Gauge on the supply side reel table.
3. Push the “BEGIN” to enter the loading status.
4. Measure the torque five times, and find the average value. Press the “DATA+” or “DATA-” in the status so that the torque is within the specification.

2-4. Take Up Reel Motor Torque Offset Adjustment

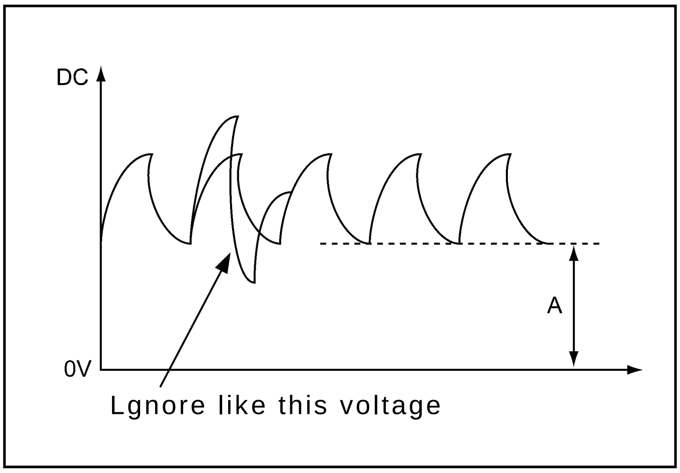
Board	SERVO
Spec.	1.5mN•m ± 0.2mN•m (15g•cm ± 2g•cm) (five times on average)
Test	------
Adjust	A03:T TORQUE
Input signal	------
Mode	STOP
Tape	------
M. Eq	Dial Torque Gauge

1. Open the “A00: SERVO ADJUST” menu on Service menu and select the item “A03: T TORQUE”.
2. Set the Dial Torque Gauge on the Take up side reel table.
3. Press the “BEGIN” to enter the loading status.
4. Measure the torque five times, and find the average value. Press the “DATA+” or “DATA-” in the status so that the torque is within the specification.

2-5. Photo Sensor Voltage Adjustment

Board	AV SYSCON
Spec.	A = 2.2 ± 0.6 VDC
Test	TP60002 (S PHOTO) TP60001 (T PHOTO)
Adjust	VR60002 (S-PHOTO) VR60001 (T-PHOTO)
Input signal	------
Mode	STOP
Tape	VFK1423(Tape Big./End Det.Casstte)
M. Eq	Oscilloscope

1. Insert the Alignment tape (VFK1423) and measure the voltage at Test Point.
2. Adjust VR60001 and VR60002 so that the A portion of DC voltage is within the specification.

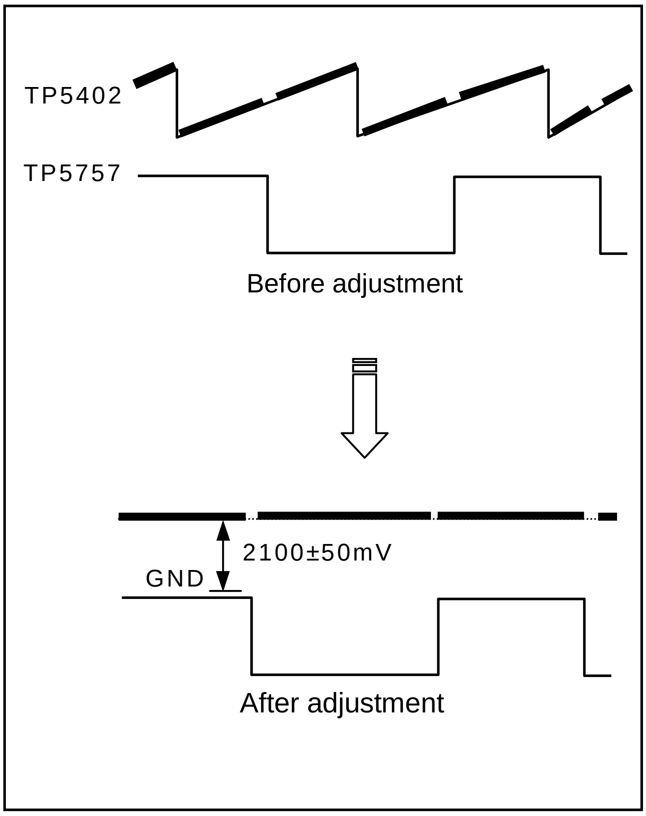


3. RF SECTION

3-1. Clock Refresh PLL Adjustment

Board	RF
Spec.	2100mV ± 50mV
Test	TP5402(E2) CH1, TP5757(A1) CH2
Adjust	VR5402(E2)
Input signal	------
Mode	PLAY
Tape	**NTSC:** VFK3580KM (Color bar portion) **PAL:** VFM3680KM(Colour bar portion)
M. Eq	Oscilloscope

1. Connect the TP5402 to the CH1 and the TP5757 to the CH2 of the oscilloscope, respectively.
2. Adjust the VR5040 so that the value at TP5402 is within the specification.



3-2. AUTO EQ Adjustment Procedures

< Preparation >

Test	RS232C Port
M. Eq	PC(w/o AD Board), RS232C cable (straight type) VFK1472A (RF Adj. Software)
Tape	**NTSC:** VFM3583KM(Auto EQ Alignment Tape) **PAL:** VFM3683KM(Auto EQ Alignment Tape) **NTSC:** VFM3010EDS(DV color bar Alignment tape) **PAL:** VFM3110EDS(DV colour bar Alignment tape)
Spec.	DVCPRO PB Head: less than -4.2 DVCPRO RP Head: less than -3.2 DV Playback : less than -3.0

1. Install RF Auto Adjustment Software (VFK1472A) to your PC/AT Compatible, MS-DOS later than 6.3 and Installed Windows 3.1 or Windows 95).
   * Make a new holder (example: c:md aeq) and copy all file from disk (VFK1472A).
2. Connect RS232C port of the VTR and Serial port of PC with 25pin - 9pin Straight Cable.
3. Confirm set-up menu setting as below. (default setting)
   104:TAPE IN MODE → STOP
   105:TAPE END MODE → STOP
   106:AUTO BACK → ON
   107:FORMAT SEL → DVCPRO
   108:REC INHIBIT → OFF
   200:BOUAD RATE → 9600
   201:DATA LENGTH → 8BIT
   202:STOP BIT → 1BIT
   203:PARITY → NONE
   204:ACK RETURN → ON
   111:MEMORY MODE → OFF
4. Set “Local/Menu/Remote” switch on the Front panel to “REMOTE” mode.

< Back up of RF adjustment data >

Before AUTO EQ adjustment executed, we recommend RF adjustment data download to PC.

●Use Windows 95

1. Select “ Start ” — ” Program ” — ” MS–DOS Prompt” and open the DOS window.
2. Type “ adjdata_-r_-r ”on command line and press <ENTER>.

3. PC displayed “ Is Serial No. XXXXXXX OK ? _> ” message, confirm serial number display is the same as VTR Serial No.
   If yes : press <ENTER>, if no : type correct serial No. and press <ENTER>.
4. After finish download completely, automatically displayed messege “RF adjust data download complete.” And RF adjustment data store to file ”adj.dat”.

- Use MS-DOS

1. Type “ adjdata_-r_-r ”on command line and press <ENTER>.
2. After steps are the same as Windows 95 mode.

Note: <upload procedure of RF Adjustment data>

- Use Windows 95

1 Select “ Start ” — ” Program ” — ” MS-DOS Prompt” and open the DOS window.

2 Type “ adjdata_-w_-r ”on command line and press <ENTER>.

3. PC displayed “This Serial - No. is XXXXXXX ”and “ Is setup data serial - No. is XXXXXXX ” message, confirm setup data sSerial number is the same as VTR serial No.
   If yes : press <ENTER>, if no : type correct serial No. and press <ENTER>.
4. After finish upload completely, automatically displayed messege “RF adjust data upload complete.”.

- Use MS-DOS

1. Type “ adjdata_-w_-r ”on command line and press <ENTER>.
2. After steps are the same as Windows 95 mode.

< Operation - How to use >

● Use Windows95

1. Select “Start” - “Program” - “MS-DOS Prompt” and open the DOS window.
2. Type “autoeq” on command line and press <ENTER>.
3. PC displayed “Is serial No. xxxxxxx ok? ->” message, confirm serial number display is the same as VTR serial No.. If yes:press < ENTER >, if no:type correct serial No. and press < ENTER >.
4. At next, PC displayed “Insert Auto EQ Alignment Tape” message, insert Auto EQ Alignment Tape into the VTR.
5. Then automatically start DVCPRO EQ adjustment and REC current adjustment. And wait until adjustment completed.
6. After finish DVCPRO EQ and REC current adjustment, automatically dispalyed error rate for each Head. And please confirm error rate in the specification.
7. Repeat operation of item 2 and 3 as above.
8. At next, PC displayed “Insert Auto EQ Alignment Tape” message, insert Auto EQ DV Alignment Tape into the VTR.
9. Then automatically start DV adjustment. And wait until adjustment completed.
10. After finish DV adjustment, automatically dispalyed error rate for each Head. And please confirm error rate in the specification.

Note: Adjustment will take approx. 20min. (EQ Adj. → REC Adj. → DV Adj.)

● Use MS-DOS

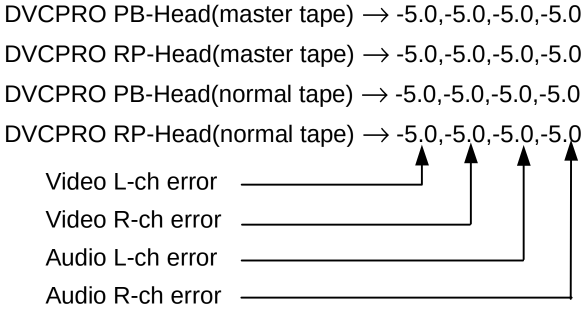
1. Type “autoeq” on command line and press <ENTER>.
2. After steps are the same as Windows95 mode.

< Error Rate Display >

When completed adjustment, automatically displayed error rate for each Head as shown below.

****** Example ******

(For DVCPRO)



```
DVCPRO PB-Head(master tape) → -5.0,-5.0,-5.0,-5.0
DVCPRO RP-Head(master tape) → -5.0,-5.0,-5.0,-5.0
DVCPRO PB-Head(normal tape) → -5.0,-5.0,-5.0,-5.0
DVCPRO RP-Head(normal tape) → -5.0,-5.0,-5.0,-5.0
```

NOTE:

(master tape): alignment tape playback error rate

(normal tape): self-recording tape playback error rate

(For DV)

DV(master tape) → -5.0,-5.0,-5.0,-5.0

Video L-ch error

Video R-ch error

Audio L-ch error

Audio R-ch error

< Option Command >

The adjustment program can be changed as follows:

autoeq - <option letter>

(make space between “autoeq” and “-”)

- example: Option list display → autoeq -h <ENTER>

p: Playback EQ adjustment only

r: Recording adjustment only

z: Recording & DV EQ adjustments

d: No display for error rate and adjustment value during adjustment

l: No output to log file for error rate and adjustment value during adjustment

i: Adjustment start based on defalut value

f: Perform recording frequency adjustment

a: No execute DV interchangeability adjustment

h: Option list & version display

< Create File >

During adjustment, the following files (text file) automatically create in directory

autoeq.log:	Error rate, adjustment value and adjustment item during adjustment
rf_err.dat:	Error rate measurement value after completed adjustment
adj.dat:	All of RF adjustment value after completed adjustment

< Program Quit >

1-1. Emergency program quit

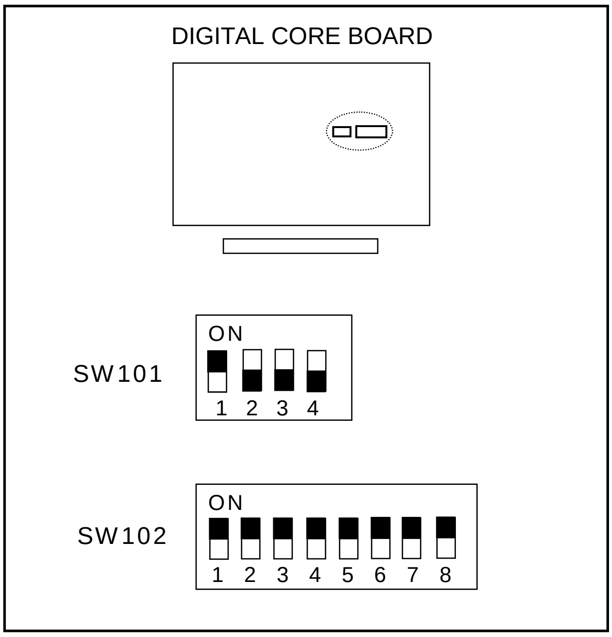
1) Press STOT button.
2) Press EJECT button.
3) Try press <Ctrl> and <C> key.
4) Turn off the VTR power and will be come “Time out” message on PC display.
5) For Windows95, reboot the PC by <Ctrl> + <Alt> + <Del> key.

4. DIGITAL CORE SECTION

4-1. Dip Switch Initial Setting

Set the dip switches by following the steps below.

1. Set the bit1 of DIP SW101 to ON and set the bit 2 to 4 of DIP SW101 to OFF position.
2. Set the bit 1 through 8 of DIP SW102 to ON position.



4-2. Audio VCO Center Frequency 48 KHz Adjustment

Board	DIGITAL CORE
Spec.	48.00 ± 0.01KHz
Test	TP3104 (LRCLK)110
Adjust	VR3101
Input signal	------
Mode	EJECT
M. Eq	Frequency Counter

1. Open the “B00: MODE SELECT” menu of Service menu and set the item “B09:AD VCO TEST” to “48/TST” MODE.
2. Adjust the VR3101 so that the frequency is within the specification.

4-3. Audio VCO Center Frequency 44.1 KHz Adjustment

Board	DIGITAL CORE
Spec.	44.1 ± 0.01KHz
Test	TP3104 (LRCLK)
Adjust	VR3102
Input signal	------
Mode	EJECT
M. Eq	Frequency Counter

1. Open the “B00: MODE SELECT” menu of Service menu and set the item “B09:AD VCO TEST” to “44/TST” MODE.
2. Adjust the VR3102 so that the frequency is within the specification.

4-4. Audio VCO Center Frequency 32 KHz Adjustment

Board	DIGITAL CORE
Spec.	32.00 ± 0.01KHz
Test	TP104 (LRCLK)
Adjust	VR3103
Input signal	------
Mode	EJECT
M. Eq	Frequency Counter

1. Open the “B00: MODE SELECT” menu of Service menu and set the item “B09:AD VCO TEST” to “32/TST” MODE.
2. Adjust the VR3103 so that the frequency is within the specification.

5. TBC SECTION

Note:

1. Warm up the VTR more than 10 minutes before start the adjustment.
2. REF INPUT signal sholud be synchronized VIDEO INPUT signal.

5-1. PLL Lock DC Adjustment

Board	TBC
Spec.	0 ± 0.1V
Test	TP3203
Adjust	VC3201
Input signal	**NTSC**: VIDEO IN (75 % Color Bar) **PAL**: VIDEO IN (100 % Colour Bar)
Mode	EE
M. Eq	Oscilloscope

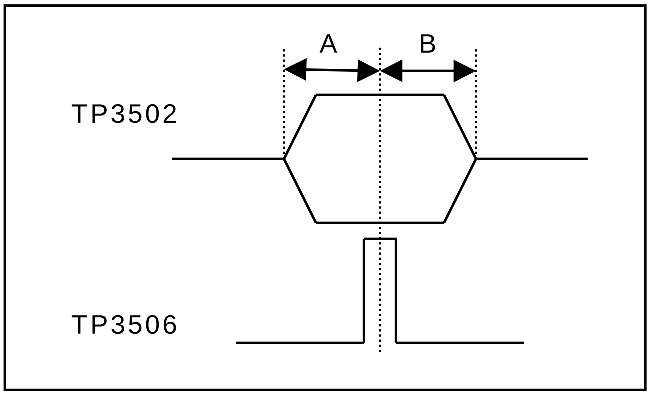
1. Connect the TP3203 to the oscilloscope.
2. Adjust the VC3201 so that the DC voltage at TP3203 is within the specification.

5-2. SG S/H Adjustment

Board	TBC
Spec.	A = B ± 10%
Test	TP3502 (RSC),TP3506 (SHP)
Adjust	VR3507 (S/H PULSE)
Input signal	**NTSC**: REF VIDEO IN (75 % Color Bar) **PAL**:REF VIDEO IN (100 % Colour Bar)
Mode	EE
M. Eq	Oscilloscope

1. Connect the TP3502 to the CH1 and the TP3506 to the CH2 of the oscilloscope, respectively.
2. Adjust the VR3507 so that the A and B within the specification, when the centers of the TP3506 (S/H pulse signal) and TP3502 (burst signal) are syncronized as shown in below figure.

Note: The centers of the S/H pulse signal at TP3506 and TP3502 burst signal should be synchonized.



5-3. 14.3MHz VCO Adjustment

Board	TBC
Spec.	0 ± 100mV
Test	TP3507
Adjust	VC3501
Input signal	**NTSC**: REF VIDEO IN (75 % Color Bar) **PAL**:REF VIDEO IN (100 % Colour Bar)
Mode	EE
M. Eq	Oscilloscope

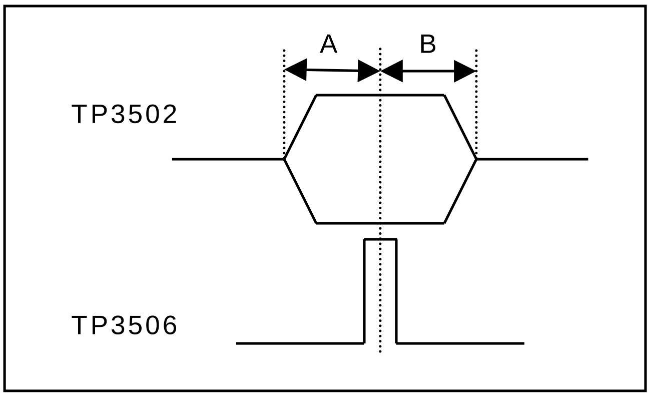
1. Connect the TP3507 to the oscilloscope.
2. Adjust the VC3501 so that the DC voltage at TP3507 is within the specification.

5-4. REF SCH Adjustment

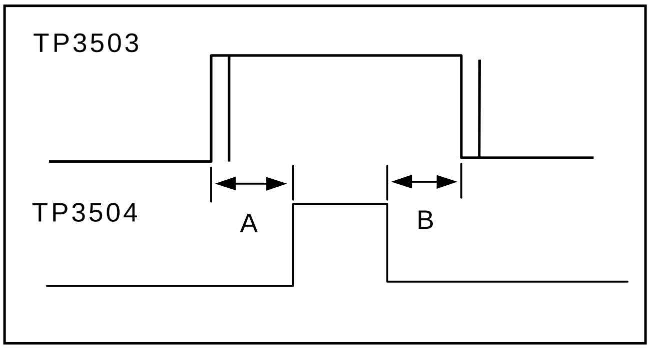
Board	TBC
Spec.	A = B ± 10%
Test	TP3503, TP3504
Adjust	VR3501
Input signal	**NTSC**: REF VIDEO IN (75 % Color Bar) **PAL**:REF VIDEO IN (100 % Colour Bar)
Mode	EE
M. Eq	Oscilloscope

Note: Confirm that the SCH for both of the VIDEO Input signal and REF VIDEO signal is 0°.

1. Connect the TP3503 to the CH1 and the TP3504 to the CH2 of the oscilloscope, respectively.
2. Adjust the VR3501 so that the leading edge of the pulse signal at TP3504 is the center of the SC signal of the TP3503, then relationship of A and B should be within the specification.



(for NTSC)



(for PAL)

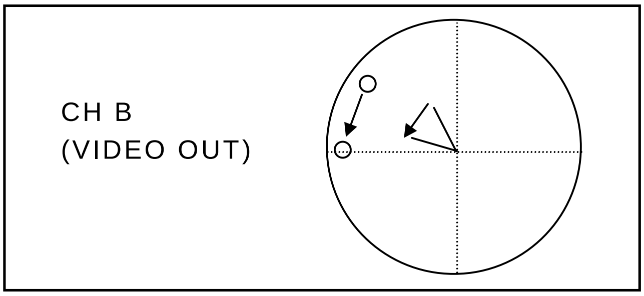
5-5. System Sub Carrier Phase Adjustment (for NTSC)

Board	TBC
Spec.	0 ± 1°
Test	VIDEO OUT (CH B), REF VIDEO IN (CH A)
Adjust	VR3508 (SYS SC PHASE)
Input signal	REF VIDEO IN (75 % Color Bar)
Mode	EE
M. Eq	SCH meter

Notes:

1. Set the waveform/vector monitor to the SCH mode, and REF to the EXT mode, respectively.
2. Observe the CH A (REF VIDEO IN), and adjust the SCH display position.

1. Connect the SCH meter to the REF VIDEO IN and VIDEO OUT.
2. Adjust the VR3508 so that the phase of SCH synchronixed between EXT REF VIDEO IN signal and VIDEO OUT signal.



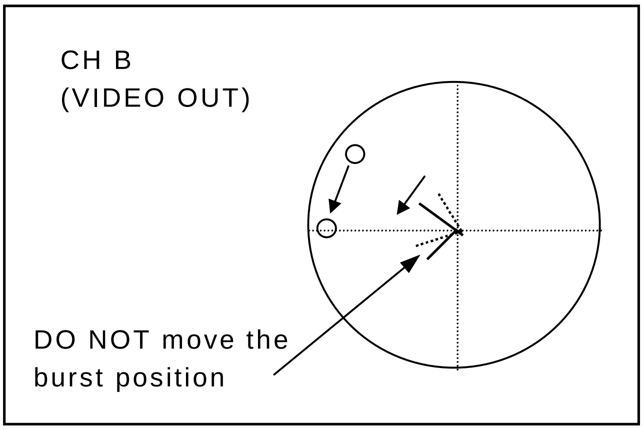
5-5. System Sub Carrier Phase Adjustment (for PAL)

Board	TBC
Spec.	0 ± 1°
Test	VIDEO OUT (CH B) REF VIDEO IN (CH A)
Adjust	<SYSTEM SET UP MENU> 03: SCH COARSE 04: SCH FINE
Input signal	REF VIDEO IN (100 % Colour Bar)
Mode	EE
M. Eq	SCH Meter

Notes:

1. Set the waveform/vector monitor to the SCH mode, and REF to the EXT mode, respectively.
2. Observe the CH A (REF VIDEO IN), and adjust the SCH display position.

1. Connect the SCH meter to the REF VIDEO IN and VIDEO OUT.
2. Open the SYSTEM SET UP Menu and select item "03: SCH COARSE".
3. Press "PAUSE (+) " or "PLAY (-) " botton so that the coarse adjust the phase of SCH synchronized between EXT REF VIDEO IN signal and VIDEO OUT signal.
4. Next, select item "04: SCH FINE ", and press "PAUSE (+) " or "PLAY (-) " botton so that the phase of SCH synchronized between EXT REF VIDEO IN signal amd VIDEO OUT signal.

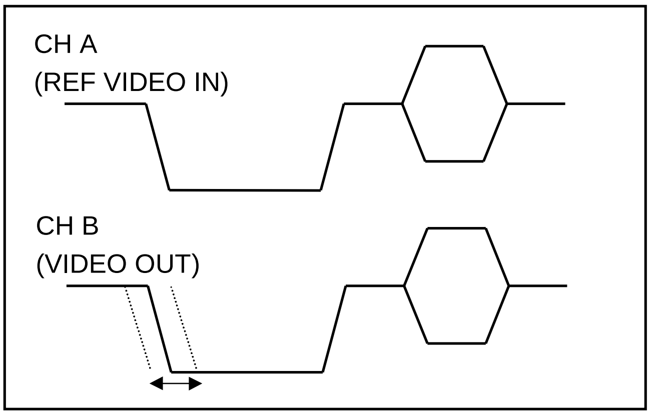


5-6. System H Phase Adjustment

Board	TBC
Spec.	See below figure.
Test	VIDEO OUT (CH B), REF VIDEO IN (CH A)
Adjust	VR3504 (SYS H PHASE)
Input signal	**NTSC**:REF VIDEO IN (75 % Color Bar) **PAL**:REF VIDEO IN (100 % Colour Bar)
Mode	EE
M. Eq	WFM

1. Magnify the portion of the horizontal synchronizing signal of the VIDEO OUT signal and REF VIDEO IN signal, and adjust the VR3504 so that the phase syncronized of H sync between VIDEO OUT and REF INPUT signal as shown in figure.

Note: The measured waveform varies discretely. Shift the volume area rearward once (in the delay direction), and adjust it at the area to where it returns by reversing.



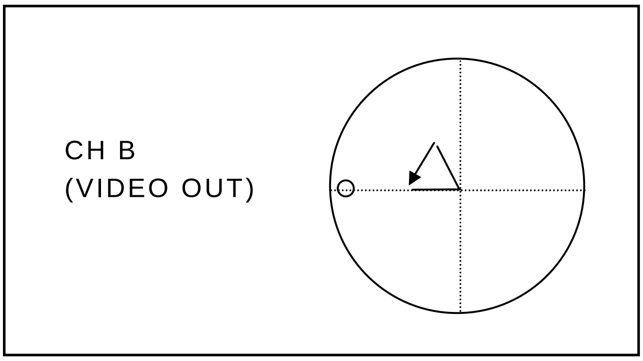
5-7. Burst Phase Adjustment

Board	TBC
Spec.	0 ± 1°
Test	VIDEO OUT (CH B) REF VIDEO IN (CH A)
Adjust	<SYSTEM SET UP MENU> 03: SCH COARSE 04: SCH FINE
Input signal	**NTSC**:REF VIDEO IN (75 % Color Bar) **PAL**:REF VIDEO IN (100 % Colour Bar)
Mode	EE
M. Eq	SCH Meter

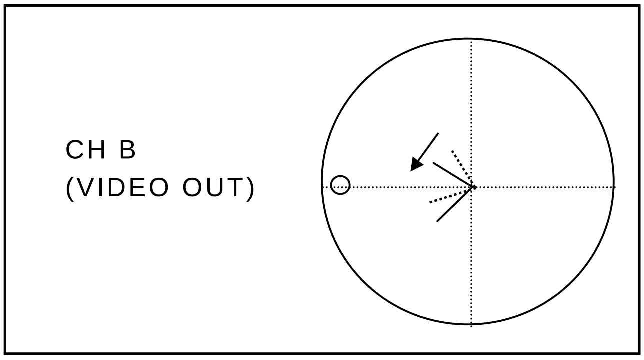
Notes:

1. Set the waveform/vector monitor to the SCH mode, and REF to the EXT mode, respectively.
2. Observe the CH A (REF VIDEO IN), and adjust the SCH display position.

1. Open the SYSTEM SET UP menu and select the item "03: SCH COARSE".
2. Press "PAUSE (+)" or "PLAY (-)" button so that the coarse adjust the burst phase of the CH B to 0 degree.
3. Next, select the item "04: SCH FINE", and press "PAUSE (+)" or "PLAY (-)" button so that the burst phase of the CH B is bebome 0 degree.



(for NTSC)

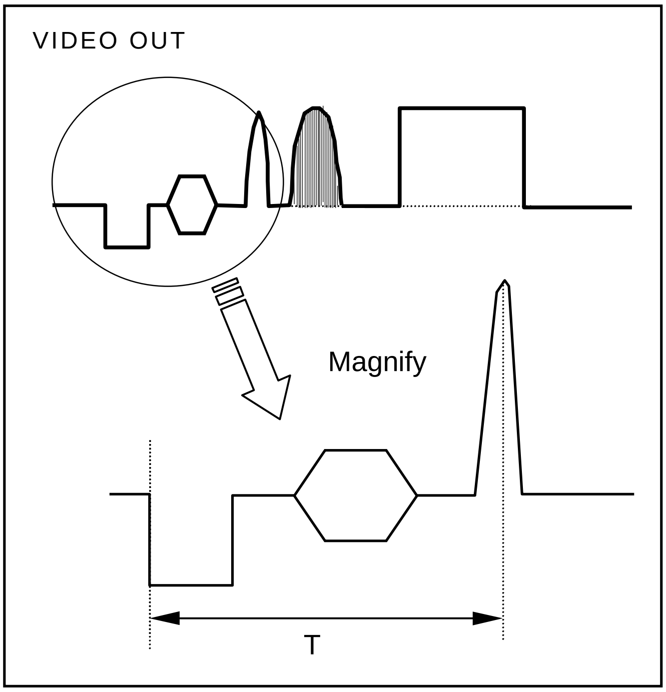


(for PAL)

5-8. Video Position Adjustment

Board	TBC
Spec.	T = 13.8 ± 0.01µs
Test	VIDEO OUT
Adjust	F85: VIDEO PHASE (VIDEO ADJUST)
Input signal	**NTSC**:REF VIDEO IN (75 % Color Bar) **PAL**:REF VIDEO IN (100 % Colour Bar)
Mode	PLAY
Tape	**NTSC**:VFM3580KM (Pulse & Bar portion) **PAL**:VFM3680KM (Pulse & Bar portion)
M. Eq	Oscilloscope

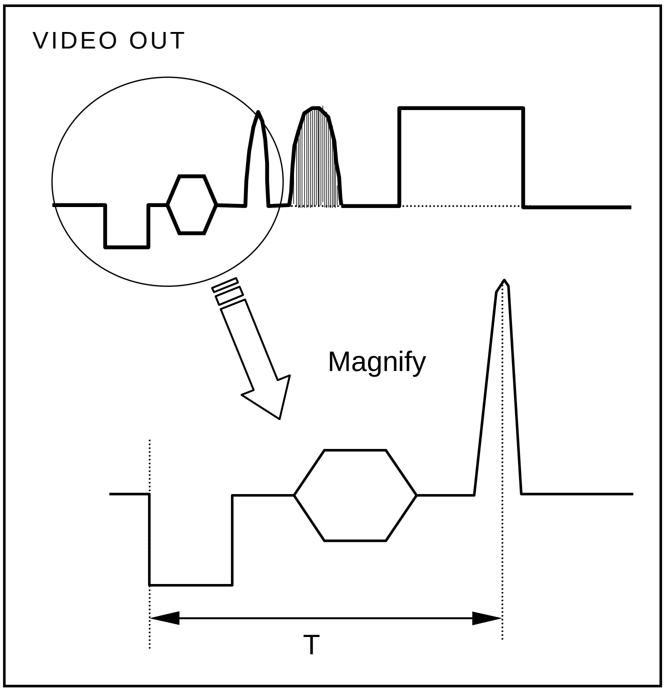
1. Open the VIDEO ADJUST menu on the service menu, and select the "F85: VIDEO PHASE".
2. Press "PAUSE (+)" or "PLAY (-)" button so that the period T (between center of sync and center of 2T pulse) is within the specification.



5-9. Y signal Timing Adjustment (1)

Board	TBC
Spec.	T = 13.8 ± 0.01µs
Test	VIDEO OUT
Adjust	VR3001 (SYNC 0)
Input signal	**NTSC**:REF VIDEO IN (75 % Color Bar) **PAL**:REF VIDEO IN (100 % Colour Bar)
Mode	PLAY
Tape	**NTSC**:VFM3580KM (Pulse & Bar portion) **PAL**:VFM3680KM (Pulse & Bar portion)
M. Eq	Oscilloscope

1. Open the “B00 MODE SELECT” menu on the service menu, and set the “B10 SHUFFLE EE” to the ON position.
2. Adjust the VR3001 so that the period T (between center of sync and center of 2T pulse) is within the specification.

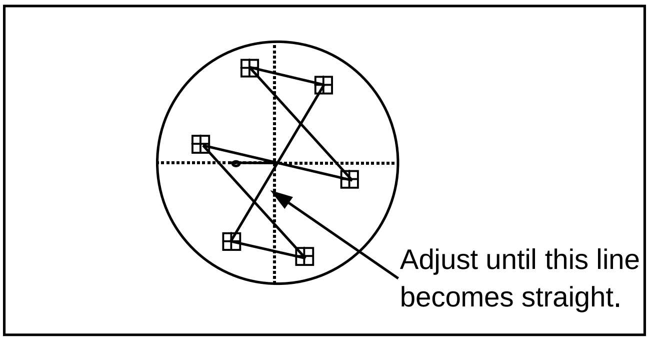


5-10. Y signal Timing Adjustment (2)

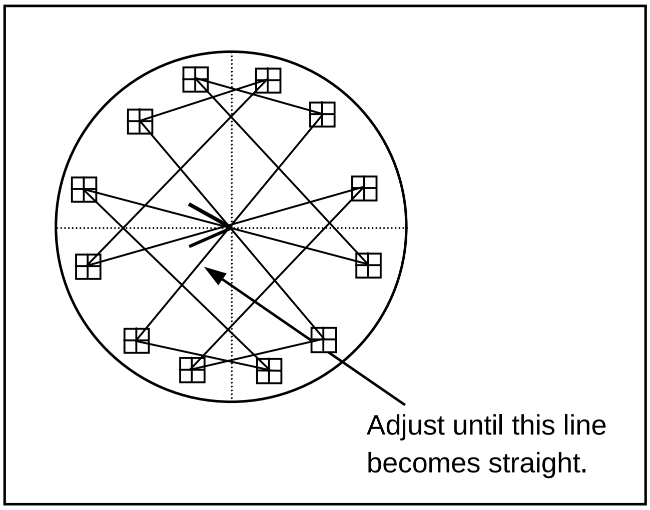
Board	TBC
Spec.	See below figure
Test	VIDEO OUT
Adjust	VR3001 (SYSC 0)
Input signal	**NTSC:** VIDEO IN (75 % Color Bar) **PAL:** VIDEO IN (100 % Colour Bar)
Mode	EE
Tape	------
M. Eq	Vector Scope

1. Set the INPUT SELECT SW to the LINE.
2. Open the “B00 MODE SELECT” menu on the service menu, and set the “B10 SHUFFLE EE” to the ON position.
3. Adjust VR3001 so that line of between Mg and G is became straight as shown in the figure below.

Note: Adjust VR3001 near the range at adjustment point by “Y signal timing adjustment (1)”. In case of quantity of adjustment at VR3001 to much, perform the Y signal timing adjustment (1) again.



(for NTSC)



(for PAL)

6. VIDEO I/O SECTION

6-1. Initial Setting

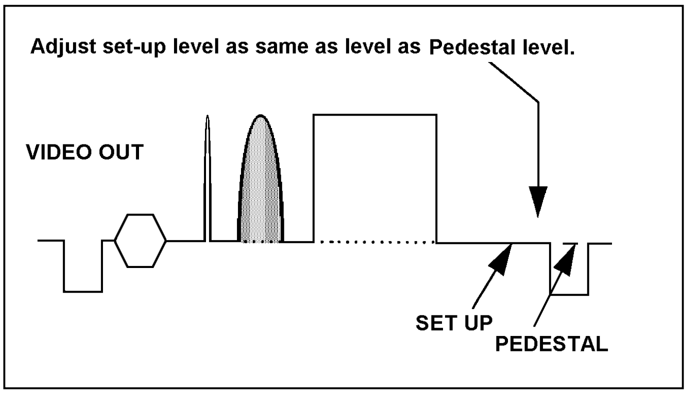
1. Be sure to set the VIDEO LEVEL, SET UP, and HUE CHROMA LEVEL on the System Set Up menu to 0 unless otherwise specified.
2. Warm up the VTR more than 10 minutes before perform adjustmen.
3. REF INPUT signal sholud be synchronized VIDEO INPUT signal.

6-2. Set Up Adjustment

Board	VIDEO I/O
Spec.	**NTSC**: Set up level = Pedestal level ± 0.5 IRE **PAL**: Set up level = Pedestal level ± 5 mV
Test	VIDEO OUT
Adjust	VR30806
Input signal	------
Mode	PLAY
Tape	**NTSC:**VFM3580KM (Pulse & Bar portion) **PAL:**VFM3680KM (Pulse & Bar portion)
M. Eq	WFM

1. Adjust the VR30806 so that the set up level is equal to the pedestal level.

Note: As this signal has some carrier leak and noise etc, set the Y filter switch on WFM and magifled the gain.

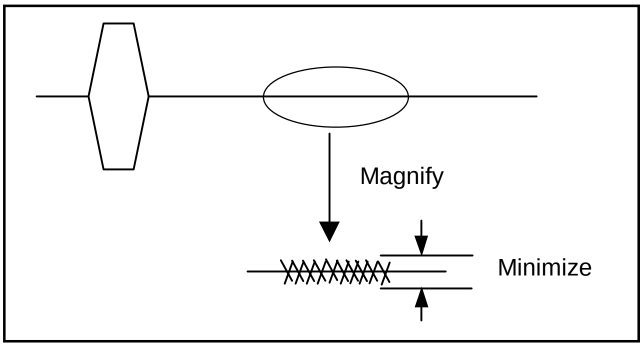


6-3. Carrier Balance Adjustment

Board	VIDEO I/O
Spec.	Less than 5 mVp-p
Test	VIDEO OUT
Adjust	VR30908 (PB BAL) VR30907 (PR BAL)
Input signal	------
Mode	PLAY
Tape	**NTSC**:VFM3580KM (Pulse & Bar portion) **PAL**:VFM3680KM (Pulse & Bar portion)
M. Eq	WFM

1. Use the WFM in the single line sweep mode. Set the chroma filter to the ON, and maximize the gain.
2. Adjust VR30907 (PR BAL) and VR30908 (PB BAL) so that the carrier leak is minimum as shown in figure.

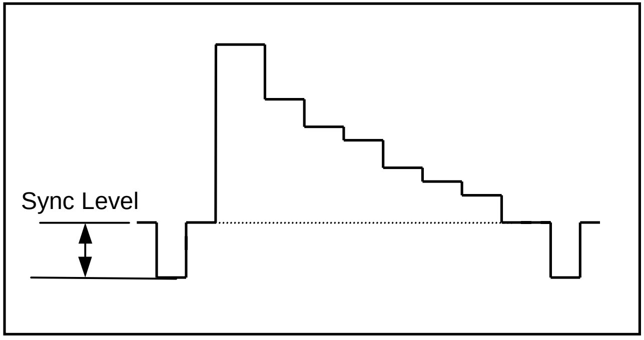
Note: Set the time axis to the MAG for the adjustment.



6-4. SYNC Level Adjustment

Board	VIDEO I/O
Spec.	**NTSC**: 40 IRE ± 1 IRE **PAL**: 300mV ± 1 %
Test	S-VIDEO (Y OUT)
Adjust	VR30805 (SYNC LEV)
Input signal	------
Mode	PLAY
Tape	**NTSC**:VFM3580KM (75 % Color Bar) **PAL**:VFM3680KM (100 % Colour Bar)
M. Eq	WFM

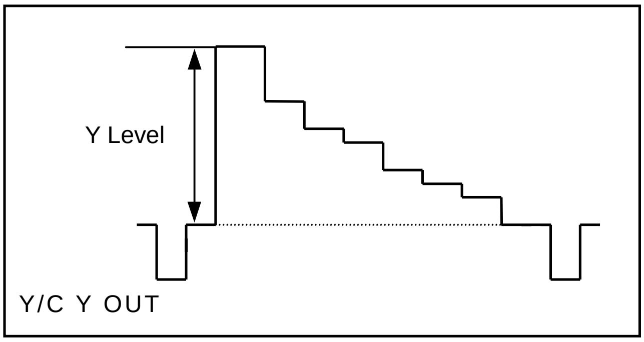
1. Adjust the VR30805 so that the sync level is within the specification.



6-5. Y/C Y Level Adjustment

Board	VIDEO I/O
Spec.	NTSC: 100 IRE ± 2% PAL: 700mV ± 1%
Test	S-VIDEO (Y OUT)
Adjust	VR30803 (V LEV OFST) VR30802 (VIDEO LEV FINE)
Input signal	------
Mode	PLAY
Tape	**NTSC**:VFM3580KM (75 % Color Bar) **PAL**:VFM3680KM (100 % Colour Bar)
M. Eq	WFM

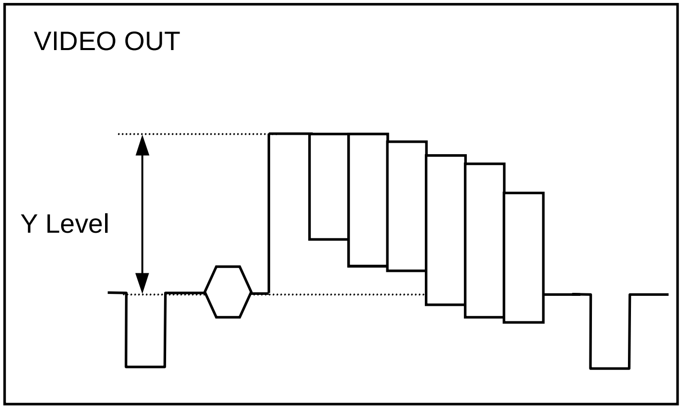
1. Adjust VR30803(coarse) and VR30802(fine) so that the Y level is within the specification.



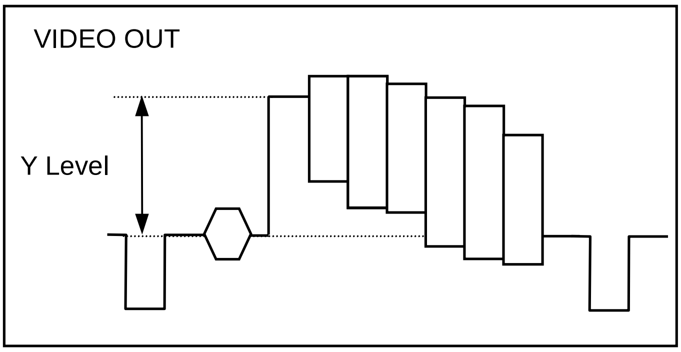
6-6. Composite Y Level Adjustment

Board	VIDEO I/O
Spec.	**NTSC**: 100IRE ± 2% **PAL**: 700 ± 1%
Test	VIDEO OUT
Adjust	VR31102 (CPS LEV)
Input signal	------
Mode	PLAY
Tape	**NTSC**:VFM3580KM (75 % Color Bar) **PAL**:VFM3680KM (100 % Colour Bar)
M. Eq	WFM

1. Adjust the VR31102 so that the Y level is within the specification.



(for NTSC)

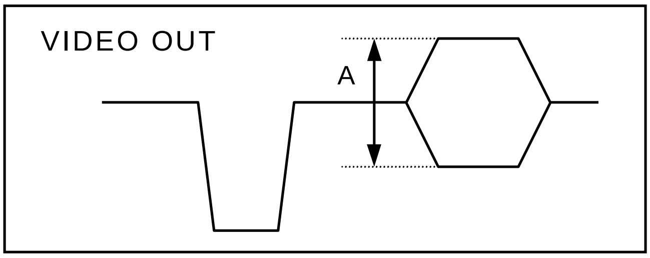


(for PAL)

6-7. Burst Level Adjustment

Board	VIDEO I/O
Spec.	**NTSC**: A=40 IRE ± 1 IRE **PAL**: A=300mV ± 1%
Test	VIDEO OUT
Adjust	VR30906 (BURST LEV)
Input signal	------
Mode	PLAY
Tape	**NTSC**:VFM3580KM (75 % Color Bar) **PAL**:VFM3680KM (100 % Colour Bar)
M. Eq	WFM

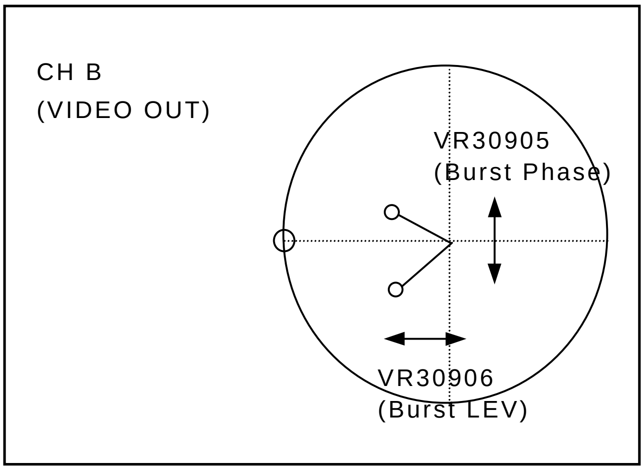
1. Connect the WFM to the VIDEO OUT output.
2. Adjust the VR30906 so that the portion A (burst level) is within the specification.



6-8. Burst Adjustment (for PAL)

Board	VIDEO I/O
Spec.	0.3 V ± 1%
Test	VIDEO OUT
Adjust	VR30906 (BURST LEV) VR30905 (BURST PHASE)
Input signal	------
Mode	PLAY
Tape	VFM3680KM (100 % Colour Bar)
M. Eq	Vector Scope

1. Adjust VR30906 and VR30905 so that the Burst level in the Specification.

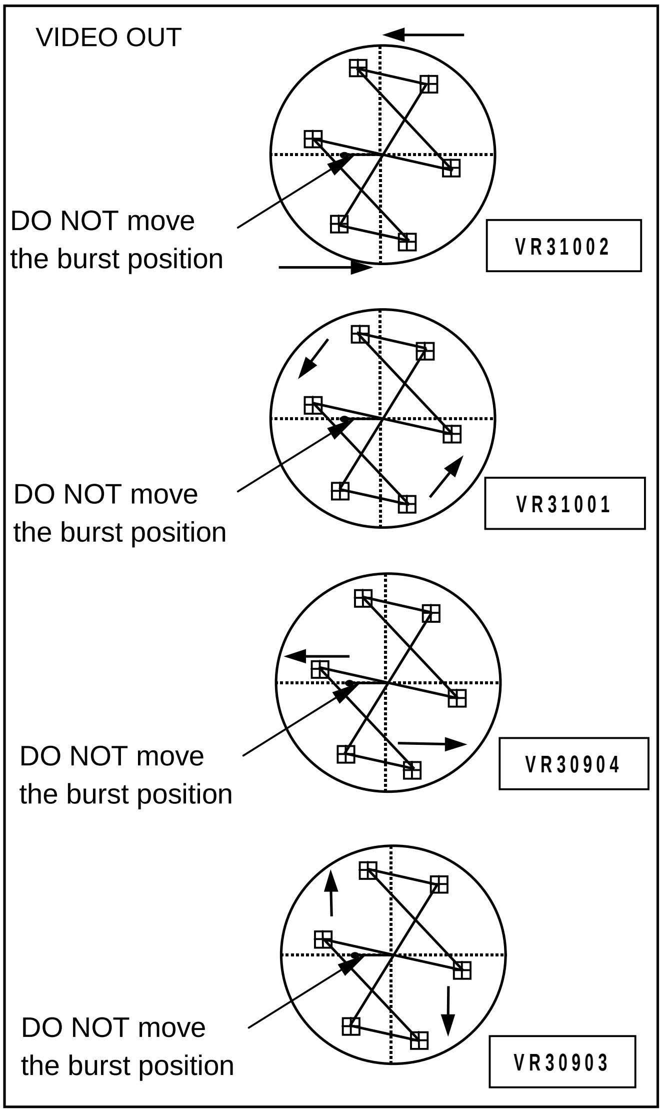


6-9. Vector Adjustment (for NTSC)

Board	VIDEO I/O
Spec.	All vector are in the inner boxes
Test	VIDEO OUT
Adjust	VR31002(QUAD), VR31001(HUE OFS) VR30904(ENC BY),VR30903(ENC RY)
Input signal	------
Mode	PLAY
Tape	VFM3580KM (75% Color Bar)
M. Eq	Vector scope

1. Connect the VIDEO OUT to the vector scope. And set the burst position by adjust phase of the vector scope.
2. Adjust the VR31002, VR31001,VR30904, and VR30903 so that each vector point in the inner boxes of the vector scope.

VR31002:	Diagonal direction
VR31001:	Rotating direction
VR30904:	Horizontal direction
VR30903:	Vertical direction

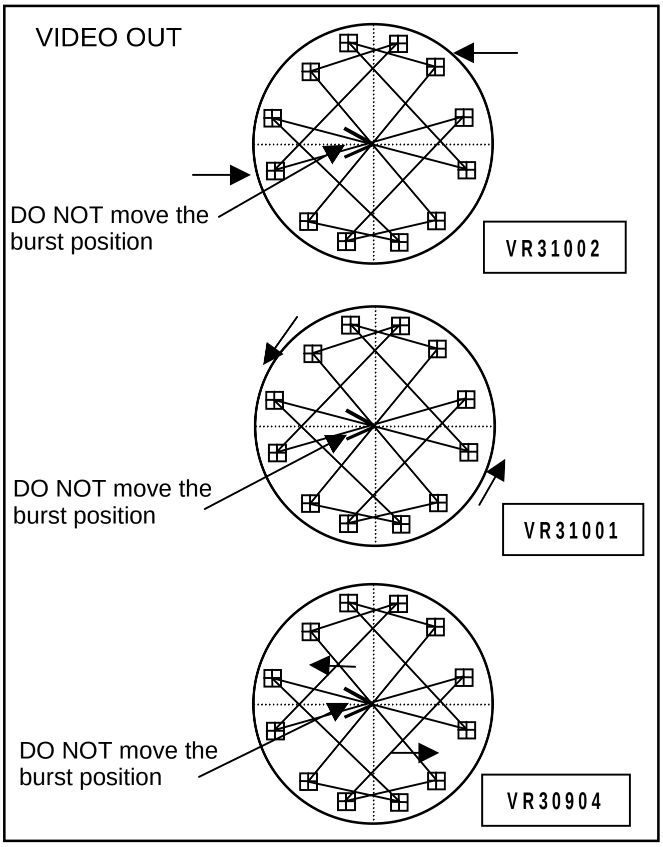

VIDEO OUT
DO NOT move the burst position
VR31002
DO NOT move the burst position
VR31001
DO NOT move the burst position
VR30904
DO NOT move the burst position
VR30903

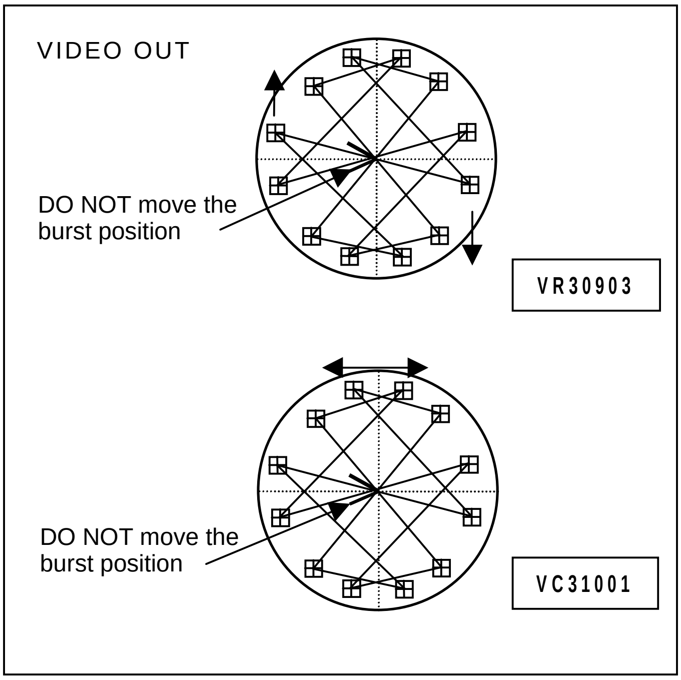
6-9. Vector Adjustment (for PAL)

Board	VIDEO I/O
Spec.	All vector are in the inner boxes
Test	VIDEO OUT
Adjust	VR31002 (QUAD), VR31001 (HUE OFS) VR30904 (ENC BY),VR30903 (ENC RY) VC31001 (PAL PHASE)
Input signal	------
Mode	PLAY
Tape	VFM3680KM (100% Colour Bar)
M. Eq	Vector scope

1. Connect the VIDEO OUT to the vector scope. And set the burst position by adjust phase of the vector scope.
2. Adjust the VR31002, VR31001, VR30904, VR30903 and VC31001 so that each vector point in the inner boxes of the vector scope.

VR31002:	Diagonal direction
VR31001:	Rotating direction
VR30904:	Horizontal direction
VR30903:	Vertical direction
VC31001:	Pal Phase

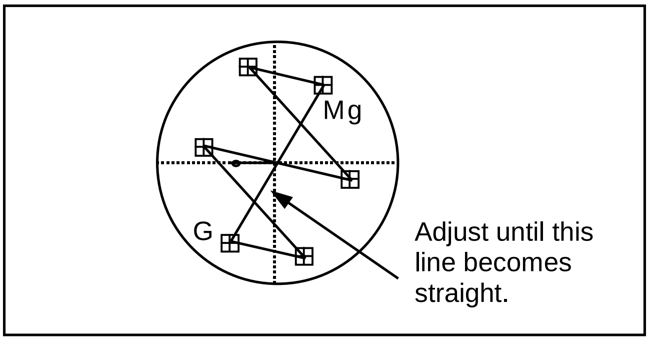

VIDEO OUT
DO NOT move the burst position
VR31002
DO NOT move the burst position
VR31001
DO NOT move the burst position
VR30904


VIDEO OUT
DO NOT move the burst position
VR30903
DO NOT move the burst position
VC31001

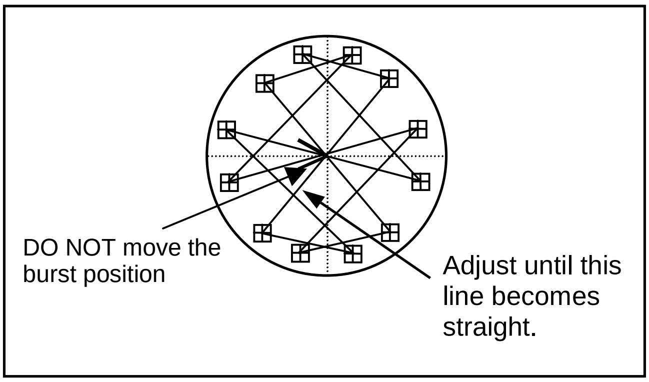
6-10. Vector Adjustment (R-Y TIMING)

Board	VIDEO I/O
Spec.	The line is become straight between Mg and G. And it vector point of Mg and G in the inner boxes.
Test	VIDEO OUT
Adjust	VR30901(RY DLY)
Input signal	------
Mode	PLAY
Tape	**NTSC**:VFM3580KM (75% Color Bar) **PAL**:VFM3680KM (100% Colour Bar)
M. Eq	Vector scope

1. Connect the VIDEO OUT to the vector scope. And set the burst position by adjust phase of the vector scope.
2. Adjust VR30901 so that line of between Mg and G is became straight line as shown in the figure below.



(for NTSC)

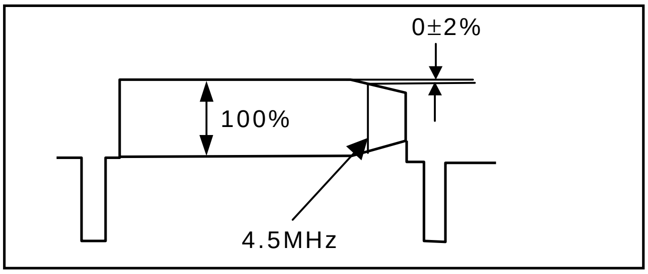

DO NOT move the burst position
Adjust until this line becomes straight.

(for PAL)

6-11. Y Freq. Response Adjustment

Board	VIDEO I/O
Spec.	4.5MHz= 0 ± 2%
Test	VIDEO OUT
Adjust	VR30804 (CPS FREQ)
Input signal	------
Mode	PLAY
Tape	**NTSC:** VFM3580KM (H sweep portion) **PAL:** VFM3680KM (H sweep portion)
M. Eq	WFM

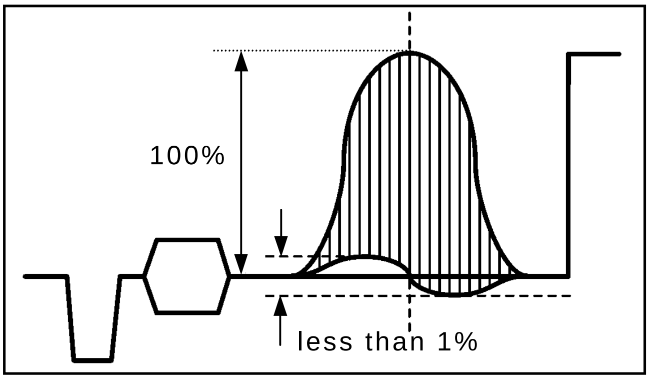
1. Observe the Y signal portion of the VIDEO OUT signal on the WFM monitor, and adjust VR30804 so that the frequency characteristic becomes flat.
    1) Adjust until the 4.5 MHz level is 98 to 102%.
    2) The level at the center of the frequency is 100%.



6-12. Composite YC Timing Adjustment

Board	VIDEO I/O
Spec.	0 ± 10ns
Test	VIDEO OUT
Adjust	VR30910 (C DLY)
Input signal	------
Mode	PLAY
Tape	**NTSC**:VFM3580KM (Pulse & Bar) **PAL**:VFM3680KM (Pulse & Bar)
M. Eq	WFM

1. Connect the WFM monitor to the VIDEO OUT.
2. Adjust the VR30910 so that the hatching portion is symmetrical as shown in figure.



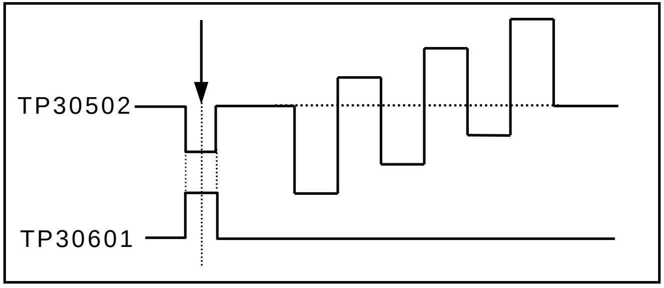
< Note >

1. After the adjustment is complete, perform the “6-7. Burst Level Adjustment” and “6-8. Vector Adjustment”.
2. Set the item “08:CHROMA LEVEL” on the System Set Up menu to 0 after the adjustment is complete.

6-13. RSTW Adjustment

Board	VIDEO I/O
Spec.	0 ± 100nsec
Test	TP30601(BGP),TP30502(AD PB)
Adjust	VR30601(RSTW)
Input signal	**NTSC**:VIDEO IN (75 % Color Bar) **PAL**:VIDEO IN (100 % Colour Bar)
Mode	EE
Tape	------
M. Eq	Oscilloscope

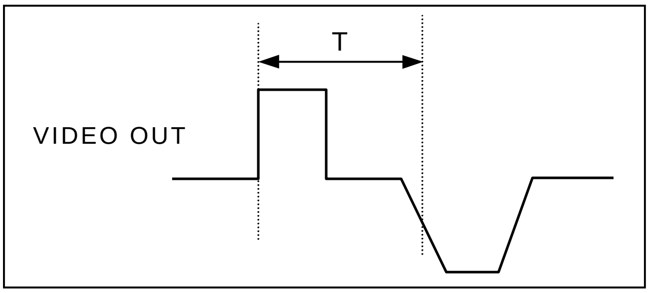
1. Adjust the VR30601 so that the burst portion of TP30601 is syncronized to center of PB blanking pulse at TP30502 as shown in figure.



6-14. OSD Character Position Adjustment

Board	VIDEO I/O
Spec.	T= 6.0 ± 0.2 µsec
Test	VIDEO MONITOR OUT
Adjust	VC31101(CHAR)
Input signal	VIDEO IN (50% flat field)
Mode	EE
Tape	------
M. Eq	WFM

1. Open the Basic Set Up menu and set the item “004: CHARA TYPE” to “WHITE”.
2. Adjust the VC31101 so that the period T is within the specification.

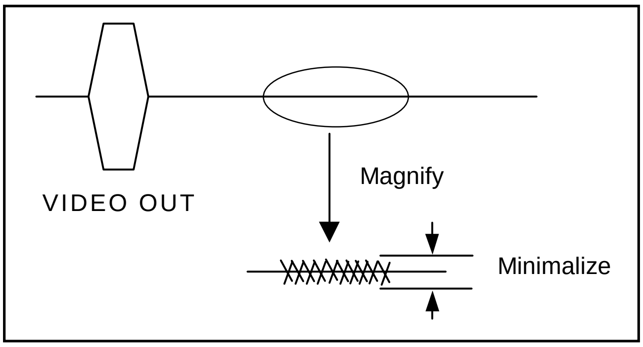


6-15. PR/PB Signal Balance Adjustment

Board	VIDEO I/O
Spec.	Less than 8 mV
Test	VIDEO OUT
Adjust	VR30507 (PR CLAMP DC) VR30508 (PB CLAMP DC)
Input signal	VIDEO IN (50% flat field)
Mode	EE
Tape	------
M. Eq	WFM

1. Use the WFM in the single line sweep mode. Set the chroma filter to the ON, and maximize the gain.
2. Adjust VR30507 (PR CLAMP DC) and VR30508 (PB BAL) so that the carrier leak is minimum as shown in figure.

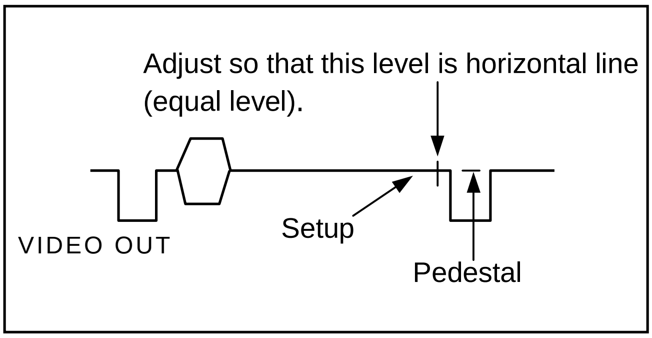
Note: Set the time axis to the MAG for the adjustment.



6-16. AD Y Clamp Level Adjustment

Board	VIDEO I/O
Spec.	Set up level = Pedestal level ± 0.5 IRE
Test	VIDEO OUT
Adjust	VR30509 (Y CLAMP DEC)
Input signal	VIDEO IN (0% flat field)
Mode	EE
Tape	-------
M. Eq	WFM

1. Open the “B00: MODE SELECT” menu on Service menu and set the item “B10: SHUFFLE EE” to ON.
2. Adjust the VR30509 so that the set up level is equal to the pedestal level.

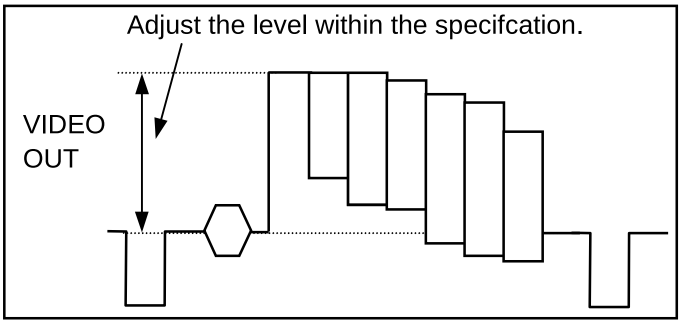


Note: As this signal has some carrier leak and noise etc, set the Y filter switch on WFM Monitor and magifled the gain

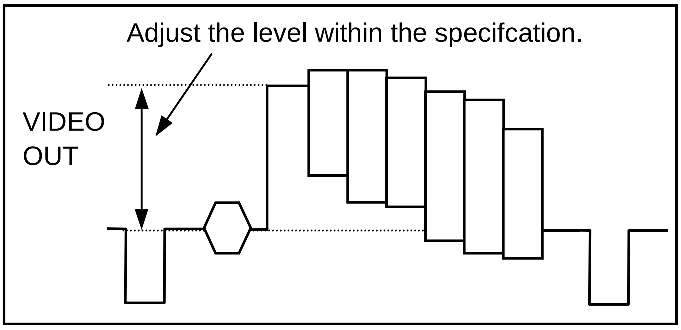
6-17. AD Y Input Level Adjustment (Y/C)

Board	VIDEO I/O
Spec.	100 ± 1 IRE
Test	VIDEO OUT
Adjust	VR30506 (AD Y)
Input signal	**NTSC**:S-VIDEO IN (75 % Color Bar) **PAL**:S-VIDEO IN (100 % Colour Bar)
Mode	EE
Tape	-------
M. Eq	WFM

1. Open the “B00: MODE SELECT” menu on Service menu and set the item “B10: SHUFFLE EE” to ON.
2. Adjust the VR30506 so that the Y level is within the specification.



(for NTSC)

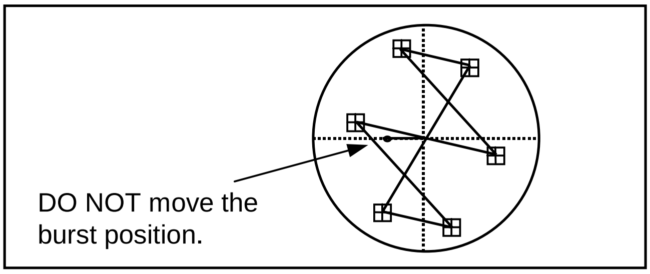


(for PAL)

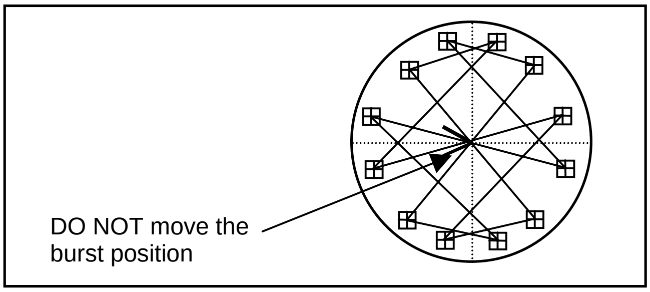
6-18. Record Chroma Adjustment (Y/C)

Board	VIDEO I/O
Spec.	All vector are in the inner boxes
Test	VIDEO OUT
Adjust	VR30603 (AXIS),VR30505 (AD PB), VR30504 (AD PR)
Input signal	**NTSC**:S-VIDEO IN (75 % Color Bar) **PAL**: S-VIDEO IN (100 % Colour Bar)
Mode	EE
Tape	-------
M. Eq	Vector scope

1. Open the “B00: MODE SELECT” menu on Service menu and set the item “B10: SHUFFLE EE” to ON.
2. Adjust the VR30603, VR30505, and VR30504 so that each point of vector in the inner boxes of vector scope.



(for NTSC)



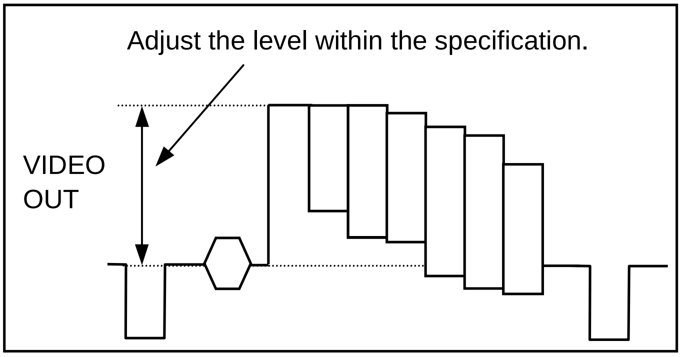
(for PAL)

Note: The adjustment of playback process should be completed.

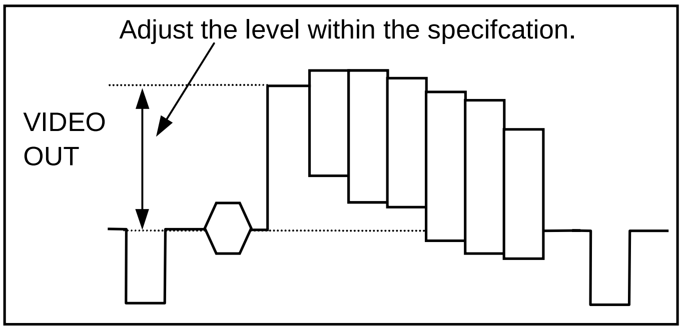
6-19. AD Y Input Level Adjustment (CPS)

Board	VIDEO I/O
Spec.	100 ± 1 IRE
Test	VIDEO OUT
Adjust	F03:CPS Y LEV(VIDEO ADJUST)
Input signal	**NTSC**:VIDEO IN (75 % Color Bar) **PAL**:VIDEO IN (100 % Colour Bar)
Mode	EE
Tape	-------
M. Eq	WFM

1. Open the “B00: MODE SELECT” menu on the service menu, and set the item “B10: SHUFFLE EE” to the ON.
2. Next, select the open the “F00: VIDEO ADJUST”, and select the item “F03: CPS Y LEV”.
3. Press “PAUSE (+)” or “PLAY (-)” button so that the Y level is within the specification.



(for NTSC)

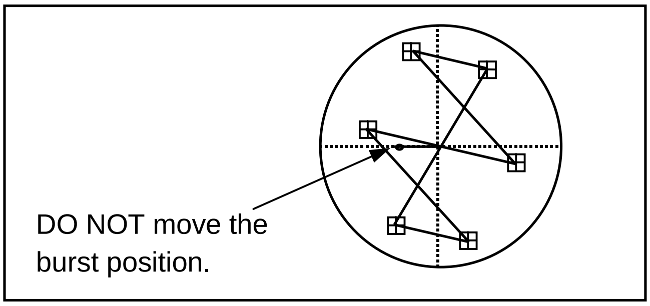


(for PAL)

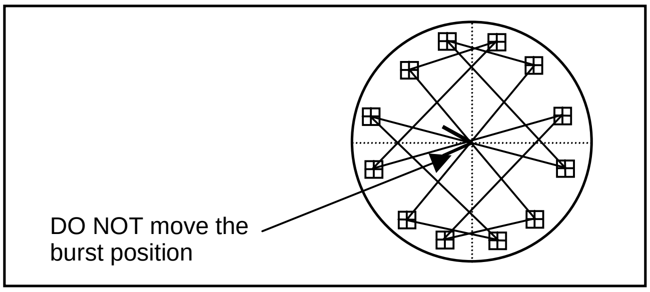
6-20. Record Chroma Adjustment (CPS)

Board	VIDEO I/O
Spec.	All vector are in the inner boxes
Test	VIDEO OUT
Adjust	F02:CPS AXIS OFS(VIDEO ADJUST) F04:C LEV(VIDEO ADJUST)
Input signal	**NTSC**:VIDEO IN (75 % Color Bar) **PAL**: VIDEO IN (100 % Colour Bar)
Mode	EE
Tape	-------
M. Eq	Vector scope

1. Open the "B00: MODE SELECT" menu on the Service menu, and set the item "B10: SHUFFLE EE" to the ON.
2. Next, open the "F00: VIDEO ADJUST" menu and select the item "F02: CPS AXIS OFS".
3. Press "PAUSE (+)" or "PLAY (-)" button so that all vector points in inner boxes of vector scope.
4. Next, select the item "F04:C LEV". And press "PAUSE (+)" or "PLAY (-)" button so that all vector points in inner boxes of vector scope.



(for NTSC)



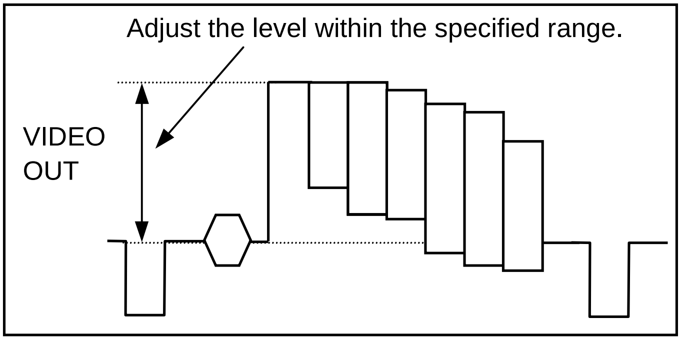
(for PAL)

Note: The adjustment of playback process should be completed.

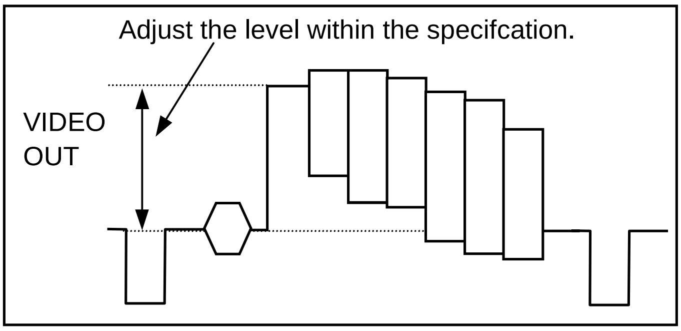
6-21. EE Y Level Adjustment

Board	VIDEO I/O
Spec.	100 ± 1 IRE
Test	VIDEO OUT
Adjust	VR30801 (EE Y LEV)
Input signal	**NTSC**:VIDEO IN (75 % Color Bar) **PAL**:VIDEO IN (100 % Colour Bar)
Mode	EE
Tape	-------
M. Eq	WFM

1. Connect the WFM to the VIDEO OUT.
2. Adjust the VR30801 so that the Y level of the video signal is within the specification.



(for NTSC)

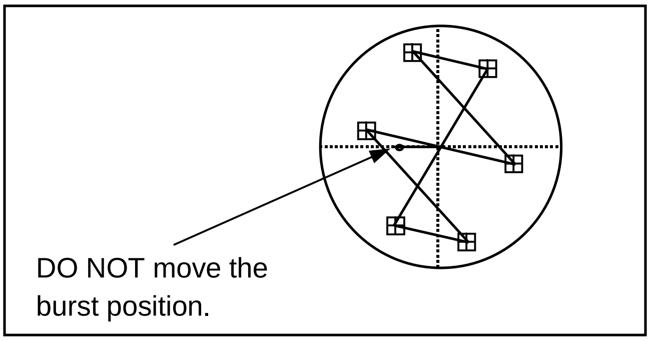


(for PAL)

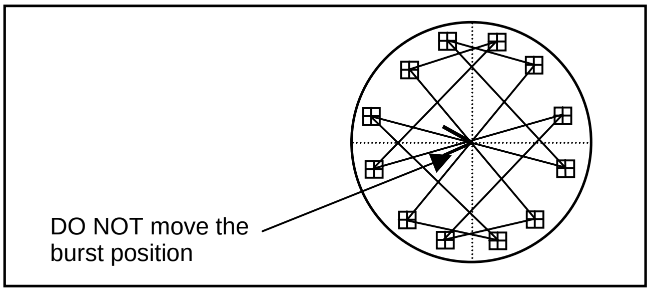
6-22. EE Chroma Adjustment

Board	VIDEO I/O
Spec.	All vector are in the inner boxes
Test	VIDEO OUT
Adjust	VR31101 (EE C LEV)
Input signal	**NTSC**:VIDEO IN (75 % Color Bar) **PAL**: VIDEO IN (100 % Colour Bar)
Mode	EE
Tape	-------
M. Eq	Vector scope

1. Connect the vector scope to the VIDEO OUT.
2. Adjust the VR31101 so that the all vectors point are in the inner boxes.



(for NTSC)



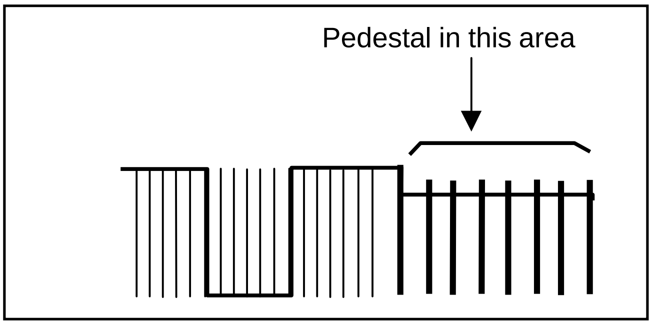
(for PAL)

Note: The adjustment of playback process should be completed.

6-23. VV Clamp Potential Adjustment

Board	VIDEO I/O
Spec.	0 ± 0.5 IRE
Test	VIDEO OUT
Adjust	F18:VV CLAMP DC (VIDEO ADJUST)
Input signal	------
Mode	PLAY
Tape	**NTSC**:VFM3580KM (75 % Color Bar) **PAL**:VFM3680KM (100 % Colour Bar)
M. Eq	WFM

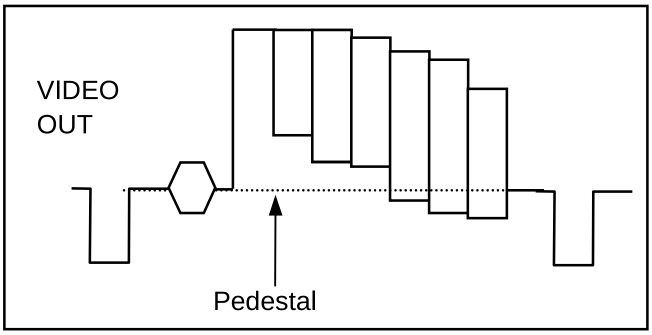
1. Open the “F00: VIDEO ADJUST” menu on Service menu and select the item “F18: VV CLAMP DC”.
2. Press “PAUSE (+)” or “PLAY (-)” button so that the pedestal level of 11H line (it located after V SYNC and equlizing pluse) is the sams as pedestal level as other line.



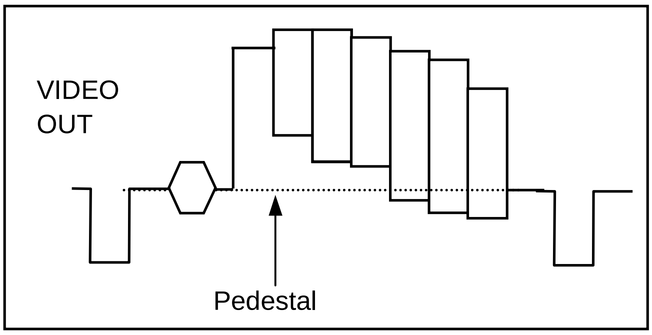
6-24. EE Clamp Potential Adjustment

Board	VIDEO I/O
Spec.	0 ± 0.5 IRE
Test	VIDEO OUT
Adjust	F17:EE CLAMP DC(VIDEO ADJUST)
Input signal	**NTSC**:VIDEO IN (75 % Color Bar) **PAL**:VIDEO IN (100 % Colour Bar)
Mode	EE
Tape	-------
M. Eq	WFM

1. Open “F00: VIDEO ADJUST” menu on Service menu and select the itemn “F17: EE CLAMP DC”.
2. Press “PAUSE (+)” or “PLAY (-)” button so that the same pedestal level, when the VIDEO IN cable is disconnected and VIDEO IN cable is connected.



(for NTSC)



(for PAL)

6-25. SCH Detection Adjustment (for NTSC)

Board	VIDEO I/O
Spec.	See below
Test	TP30607
Adjust	VR30602 (SCH), VR30604 (SCH P)
Input signal	VIDEO IN (SCH ± 70°)
Mode	EE
Tape	-------
M. Eq	WFM Monitor

1. Set the SCH is -70° of SCH signal generator.
2. Slowly turn the VR30602 counterclockwise until the TP30607 is changed from “H” to “L”.
3. Set the SCH is +70° of SCH signal generator.
4. Slowly turn the VR30604 counterclockwise until the TP30607 is changed from “H” to “L”.

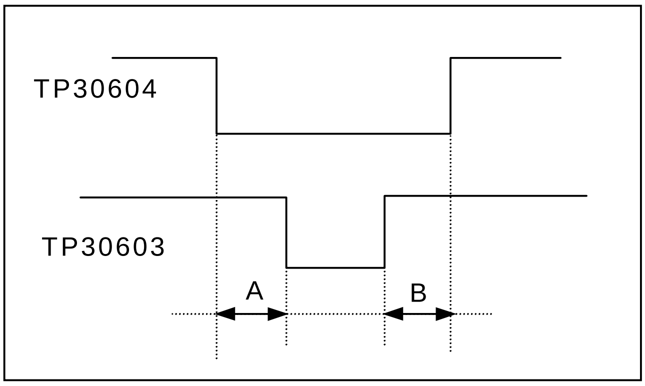
Note:

1. When turning the VR counterclockwise, be sure to turn it slowly.
2. Be sure to perform the adjustment in the direction that the TP30607 is changed from the “H” to the “L”.

6-25. SCH Detection Adjustment (for PAL)

Board	VIDEO I/O
Spec.	A = B
Test	TP30603, TP30604
Adjust	VR30602 (SCH)
Input signal	VIDEO IN (100 % Colour Bar)
Mode	EE
Tape	-------
M. Eq	Oscilloscope

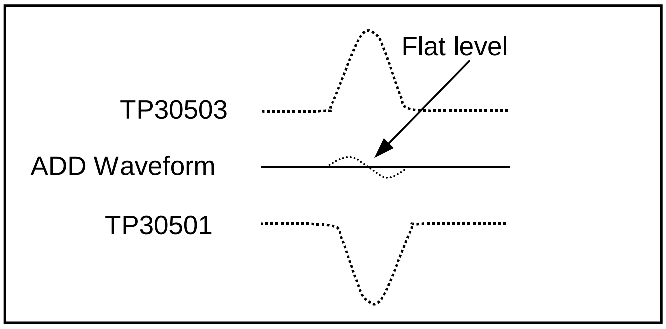
1. Connect the oscilloscope CH1 to TP30603 and CH2 to TP30604.
2. Adjust VR30602 so that the A and B within the specification.



6-26. AD Y PR Timing Adjustment

Board	VIDEO I/O
Spec.	See bolow
Test	TP30501 (AD PR) TP30503 (AD Y)
Adjust	VR30402 (PR TMG1)
Input signal	Modulation 12.5T Pulse & Bar
Mode	EE
Tape	-------
M. Eq	Oscilloscope

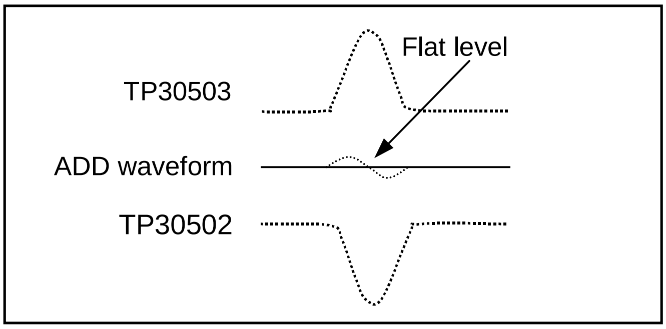
1. Set the oscilloscope to the CH2 INVERT mode (TP30501), and the CH1/CH2 ADD mode.
2. Adjust the VR30402 until the ADD signal becomes flat.



6-276. AD Y PB Timing Adjustment

Board	VIDEO I/O
Spec.	See below
Test	TP30502 (AD PB) TP30503 (AD Y)
Adjust	VR30401 (PB TMG1)
Input signal	Modulation 12.5T Palse & Bar
Mode	EE
Tape	-------
M. Eq	Oscilloscope

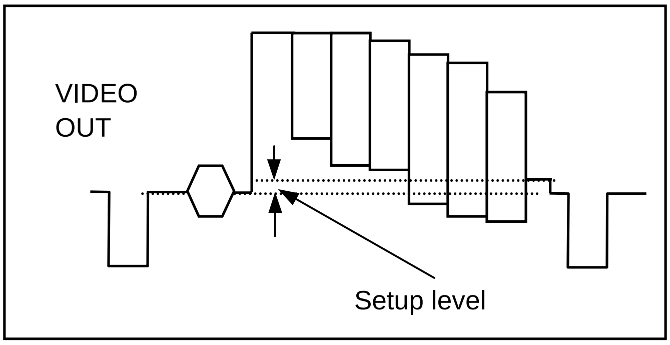
1. Set the oscilloscope to the CH2 INVERT mode (TP30502), and the CH1/CH2 ADD mode.
2. Adjust the VR30401 until the ADD signal becomes flat.



6-28. Set Up Level Adjustment (1) (for NTSC)

Board	VIDEO I/O
Spec.	SETUP LEVEL = 7.5 ± 0.5 IRE
Test	VIDEO OUT
Adjust	F14:SET UP ADD (VIDEO ADJUST)
Input signal	------
Mode	PLAY
Tape	VFM3580KM (75% Color Bar portion)
M. Eq	WFM

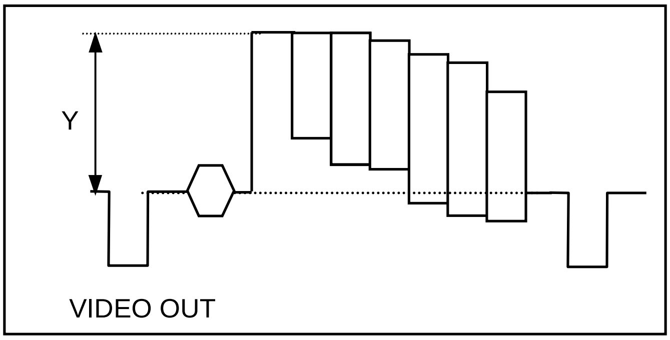
1. Open the “F00: VIDEO ADJUST” menu on Service menu and select the item “F14: SET UP ADD”.
2. Press “PAUSE(+)” or “PLAY (-)” button so that the set up level is within specification.



6-29. Set Up Level Adjustment (2) (for NTSC)

Board	VIDEO I/O
Spec.	Y = 100 ± 1 IRE
Test	VIDEO OUT
Adjust	F15:V LEV ADD(VIDEO ADJUST)
Input signal	------
Mode	PLAY
Tape	VFM3580KM(75% Color Bar portion)
M. Eq	WFM

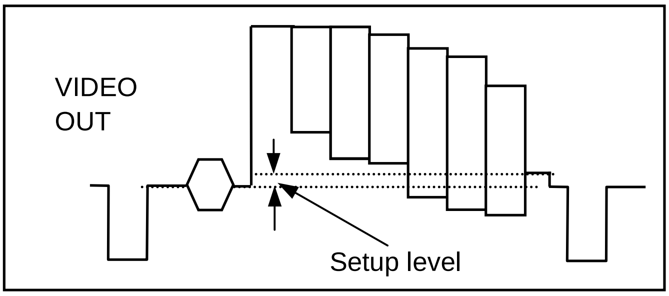
1. Open the “F00: VIDEO ADJUST” menu on Service menu and select the item “F15: V LEV ADD”.
2. Press “PAUSE(+)” or “PLAY (-)” so that the video level is within the specification.



6-30. Record Set Up Cut Adjustment (1) (for NTSC)

Board	VIDEO I/O
Spec.	SETUP LEVEL = 7.5 ± 0.5 IRE
Test	VIDEO OUT
Adjust	F16:Y CLAMP OUT(VIDEO ADJUST)
Input signal	VIDEO IN (75% Color Bar)
Mode	EE
Tape	------
M. Eq	WFM

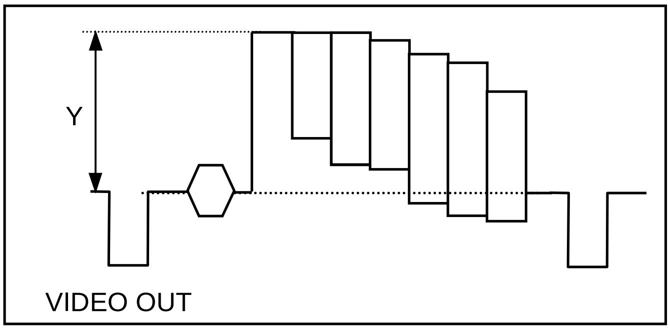
1. Open the “B00: MODE SELECT” menu on the Service menu, and set the item “B10: SHUFFLE EE” to ON.
2. Open the “F00: VIDEO ADJUST” menu and select the item “F16: Y CLAMP CUT”.
3. Press “PAUSE(+)” or “PLAY (-)” button so that the set up level is within specification.



6-31. Record Set Up Cut Adjustment (2) (for NTSC)

Board	VIDEO I/O
Spec.	Y= 100 ± 1 IRE
Test	VIDEO OUT
Adjust	VR30501
Input signal	VIDEO IN (75% Color Bar)
Mode	EE
Tape	------
M. Eq	WFM

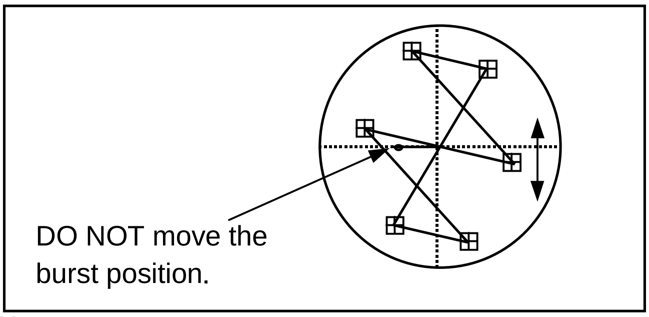
1. Open the “B00: MODE SELECT” menu on the service menu, and set the item “B10: SHUFFLE EE” to ON.
2. Adjust VR30501 so that the video level is within the specification.



6-32. Record Set Up Cut Adjustment (3) (for NTSC)

Board	VIDEO I/O
Spec.	All vector are in the inner boxes
Test	VIDEO OUT
Adjust	VR30502
Input signal	VIDEO IN (75% Color Bar)
Mode	EE
Tape	------
M. Eq	Vector scope

1. Open the “B00: MODE SELECT” menu on the service menu, and set the item “B10: SHUFFLE EE” to the ON.
2. Adjust the VR30502 so that the all vectors point are in inner boxes on vector scope.



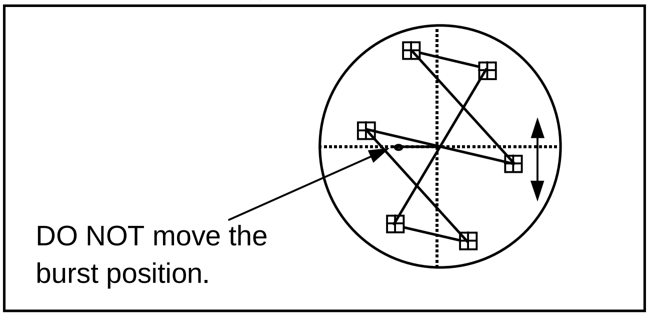
DO NOT move the burst position.

Note: The adjustment of playback process should be completed.

6-33. Record Set Up Cut Adjustment (4) (for NTSC)

Board	VIDEO I/F
Spec.	All vector are in the inner boxes
Test	VIDEO OUT
Adjust	VR30503
Input signal	VIDEO IN (75% Color Bar)
Mode	EE
Tape	------
M. Eq	Vector scope

1. Open the “B00: MODE SELECT” menu on the service menu, and set the item “B10: SHUFFLE EE” to ON.
2. Adjust VR30503 so that the all vectors point in inner boxes on vector scope.



DO NOT move the burst position.

Note: The adjustment of playback process should be completed.

7. AUDIO SECTION

7-1. Initial Setting of Audio Adjustment

1. Set the item “102:S/F/R “ on SET UP MENU TO “EE”.
2. Please warm up the VTR about 10 minute before adjustment.
3. Set the REC VR to center position and set the CONTROL SW to LOCAL position on the Front Panel.
4. In case of use Audio Precision, please set switch of impedance as indicated as below.
   - OSC Output Impedance: “Less than 25Ω (Low)”
   - Input Impedance : “more than 100KΩ (High)”.

7-2. Output Level Adjustment

Board	AUDIO
Spec.	–8 dBV ± 0.2 dB
Test	LINE OUT 1,2 (CH 1,CH 2)
Adjust	VR40201 (CH 1), VR40202 (CH 2)
Input signal	-------
Mode	PLAY
Tape	**NTSC**:VFM3580KM **PAL**:VFM3680KM
M.Eq	VTVM (Audio Precision)

1. Adjust VR40201 (CH1) and VR40202 (CH2) so that the output level (LINE OUT 1) is become in the specification.
2. Confirm that the output level of LINE OUT 2 in the specisication.

7-3. Input Level Adjustment

Board	AUDIO
Spec.	–22.6 dBV ± 0.2 dBV
Test	TP40004 (CH 1) TP40005 (CH 2)
Adjust	VR40003 (CH 1), VR40004 (CH 2)
Input Signal	LINE IN (1KHz, –8dBV: Sinewave)
Mode	EJECT
Tape	------
M.Eq	VTVM (Audio Precision)

1. Adjust VR40003(CH1) and VR40004(CH2) so that the level of Test Point is becomes in the specification.

NOTE: Set the REC VR to center (click) position.

7-4. EE Level Adjustment

Board	AUDIO
Spec.	–8 dBV ± 0.2 dB
Test	LINE OUT (CH 1,2)
Adjust	VR40301 (CH 1), VR40302 (CH 2)
Input Signal	LINE IN (1KHz, –8dBV sinewave)
Mode	EJECT
Tape	------
M.Eq	VTVM (Audio Precision)

1. Adjust VR40301(CH1) and VR40302(CH2) so that the Output level is becomes in the specification.

NOTE: Please perform this adjustment after " 7-2.Output Level Adj." and " 7-3.Input Level Adj."

7-5. Level Meter Adjustment

Board	AUDIO
Spec.	**NTSC**:AUDIO METER DISPLAY; –20dB **PAL**:AUDIO METER DISPLAY; –18dB
Test	------
Adjust	VR40303 (CH 1), VR40304 (CH 2)
Input Signal	LINE IN (1KHz, –8dBV sinewave)
Mode	EE
Tape	------
M.Eq	------

1. Adjust VR40303 and VR40304 so that the Audio Level Meter displayed –20dB (NTSC) or –18dB (PAL) position.

7-6. Initial Setting of CUE AUDIO Adj.

1. Set the bit 2 of Dip SW 902 on the AV SYSCON P.C.Board to ON position.
2. Set the "LOCAL/MENU/REMOTE" switch on the Front panel to "MENU" position for open the Service Menu.
3. Keep Pressing "END" button, press "AUDIO SELECT" button, then CH1 and CH2 indicator put out light on Audio Level Meter for CUE Audio signal output from LINE OUT terminal.

NOTE: In case of CH1 and CH2 indicator displayed, when release the END button, press END button again, then if CH1 and CH2 indicator become put out light condition, it no problem..

4. For operate VTR, keep pressing END button, press operation button (PLAY,FF etc).
5. After finish CUE AUDIO adjustment, please escape from Service menu mode.

7-7. CUE AUDIO PB LEVEL Adj.

Board	AUDIO
Spec.	–8 dBV ± 0.5 dB
Test	LINE OUT (CH1,CH2)
Adjust	VR40701
Input Signal	------
Mode	PLAY
Tape	**NTSC**: VFM3580KM (0 to 14 min) **PAL**: VFM3680KM (0 to 14 min)
M.Eq	VTVM (Audio Precision)

1. Adjust VR40701 so that the LINE OUT output level is become in the specification.

7-8. CUE AUDIO BIAS CURRENT Adj.

Board	AUDIO
Spec.	6.5 mVrms ± 0.2 mV
Test	TP40601 (HOT) TP40602 (COLD)
Adjust	VR40601
Input Signal	------
Mode	REC
Tape	------
M.Eq	VTVM

1. Connect the VTVM between TP40601 (HOT) and TP40602 (COLD).
2. Adjust VR40601 so that the level at test point in the specification.

7-9. CUE REC/PB Level Adjustment

Board	AUDIO
Spec.	–8 dBV ± 1.0 dB
Test	LINE OUT (CH1,2) TP40603
Adjust	VR40602
Input Signal	LINE IN (–8 dBV,1KHz sinewave)
Mode	REC / PLAY
Tape	Blank Tape
M.Eq	VTVM (Audio Precision)

1. Supply a 1KHz, -8dBV signal into the LINE Input and record the input signal for a few minutes.
2. Playback the just recorded portion.
3. Measure the level at LINE OUT and confim that level difference to –8 dBV.
4. Place unit into REC mode for a few minutes and playback the just recorded portion.
5. Adjust VR40602 so that the LINE OUT level is in the specification.

NOTE: In case of use Audio Precision, set indicated as below.
●AMPLITUDE
●BANDWIDTH : 22Hz, 22KHz
●FILTER: OFF